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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,506	12/01/2004	Akihiro Goto	Q83924	5134

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EXAMINER	
LAFOND, RONALD D	

ART UNIT	PAPER NUMBER
1792	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,506	GOTO ET AL.	
	Examiner	Art Unit	
	RONALD D. LAFOND	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-41 and 43-62* is/are rejected.

7)☒ Claim(s) *42* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/01/2004, 10/01/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *IDS 2/20/2008*.

DETAILED ACTION

Response to Amendment

1. The Preliminary Amendments of December 1, 2004, were received and have been entered. Original Claims 1 – 31 are acknowledged as cancelled. This Action is in response to new Claims 32 – 62, which are currently pending.

Claim Objections

2. Claims 39, 52, and 61 are objected to because of the following informalities: Improper Markush group format. In each of these Claims, the phrase "the alloy material is" should be followed by the phrase "selected from the group consisting of"; alternatively, the final grouping in each of these Claims, which currently read "and an Fe alloy", should be edited to read "or an Fe alloy". See MPEP 2173.05(h) I. Appropriate corrections are required.

3. Claim 43 is objected to because of the following informalities: Confusing grammar. The phrase "wherein the coat is formed on the surface of the work by letting discharge the electrode that contains 40 volume % or more …" is confusing; this phrase should be replaced with "wherein the electrode contains 40 volume % or more …", or some other equivalent. Appropriate correction is required.

4. Claim 50 is objected to because of the following informalities: Typo. The first word of Claim 50 should read 'The', and not 'e'. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 32, 33, 36, 38, 43, 44, 49, 51, 54, 55, 58, and 60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The term "hard to be carbonized" in these claims is a relative term which renders the claim indefinite. The term "hard to be carbonized" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

reasonably apprised of the scope of the invention. The Examiner will interpret this claim as being inclusive of cobalt, nickel, and iron.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 34, 35, 41, 44, 46, 47, 56, and 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Moro, et al. (United States Patent 6,602,561 B1, hereafter Moro; note that this patent was initially published on November 18, 1999, as PCT Publication WO 99/58744).

10. Regarding Claims 34 and 35, Moro teaches an electrode for electric discharge surface treatment (see Column 1, lines 9 and 10), wherein the electrode is a green compact made by molding metallic powders or metallic compound powders (see Column 8, lines 44 – 60), wherein the electrode is made from a powder of an alloy material that is alloyed by mixing a plurality of elements in a predetermined ratio made by mixing a powder of Co to the powder of the alloy material (ibid).

11. Regarding Claims 41 and 46, Moro teaches a method of electric discharge surface treatment (see, e.g., Column 10, lines 33 – 36), comprising: generating pulsed electric discharge in a dielectric fluid between a green compact electrode and a work (see Column 10, lines 33 – 67, and Column 11, lines 1 – 8), the electrode being made by molding a metallic powder or metallic compound powder (see citations for Claims 34 and 35); and forming a coat that contains a carbide and a non-carbonized metallic component in a predetermined ratio based on materials supplied from the green compact electrode on a surface of the work using an energy of the electric discharge (ibid).

12. Regarding Claims 44 and 47, as discussed, Moro teaches the method wherein the metallic material that is not carbonized is Co.

13. Regarding Claims 56 and 57, Moro teaches an apparatus for electric discharge surface treatment (see again Column 10, lines 33 – 36), comprising: an electrode of green compact made from a powder of

an alloy material that is alloyed by mixing a plurality of elements in a predetermined ratio (see again citations for Claims 34 and 35, and Column 10, lines 47 – 50); a dielectric fluid supply unit to immerse the electrode and a work in the dielectric fluid (see Figure 4 and Column 10, lines 40 – 42 and lines 55 and 56); and a power source unit that generates pulsed electric discharge by applying voltage between the electrode and the work (see Column 10, lines 40 – 45, and previous citations), wherein the electrode is made by mixing a powder of a Co to the powder of the alloy material (see again previous citations).

Claim Rejections - 35 USC § 102/103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 45 and 48 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Moro.

16. Regarding these Claims, Moro teaches the method wherein the material of the work is an alloy (see, e.g., Column 1, lines 18 – 37; because Moro teaches coating the genus of alloy workpieces, the species of single crystal alloys is implicitly taught). In the alternative, while Moro does not explicitly teach that the work is a single crystal alloy, Moro does teach, in Column 1, lines 18 -- 22, that "as a technique for coating the surface of a work to impart corrosion resistance and wear resistance to the surface, a discharge surface treatment method has been disclosed." Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Moro by employing a method wherein the material of the work is a single crystal alloy to have provided corrosion and/or wear resistance by an electric discharge surface treatment method to such a workpiece.

Claim Rejections - 35 USC § 103

17. Claims 39, 40, 52, 61, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moro in view of Urashiro, et al. (Japanese Patent Application Publication Number 06-182626, hereafter Urashiro).

18. Regarding Claims 39, 52, and 61, Moro does not teach the electrode, method or apparatus, wherein the alloy material is an Ni alloy containing Cr and Fe with Ni as a main component. However, Urashiro teaches that it is known to use electrodes for electric discharge machining surface treatment that contain alloys of chromium, nickel, and iron (see Derwent Abstract and, e.g., Paragraph [0014]). Specifically, Urashiro teaches, in Paragraph [0007], that it is known to use such electrodes in order to produce an alloy layer that is "excellent in corrosion resistance." Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Moro by utilizing an alloy of chromium, nickel, and iron in the electrode, method, and apparatus taught by Moro to have produced an alloy coating that is corrosion resistant with a reasonable expectation of success. Furthermore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Moro in view of Urashiro by employing an alloy of nickel, chromium, and iron with nickel as the main component with a reasonable expectation of success, because Urashiro teaches that any alloys of these materials may be used to achieve the desired effect.

19. Regarding Claims 40 and 62, as discussed, Moro teaches the electrode and apparatus wherein the electrode is made by mixing a powder of at least one of Co, Ni, and Fe to the powder of the alloy material.

Allowable Subject Matter

20. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

21. Claim 42 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. Claims 32 and 54 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

23. Claims 33, 36 – 38, 43, 49 – 51, 53, 55, and 58 – 60 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

24. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither teaches nor fairly suggests electrodes, apparatuses, or methods wherein the electrode contains 40 volume % or more metallic material that is not carbonized or wherein the ratio of the non-carbonized metallic component in the coat is 30 volume % or more. Furthermore, Applicants discuss the unexpected results that electrodes of this type allow much thicker coatings to be stably deposited onto substrates.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RONALD D. LAFOND whose telephone number is (571)270-1878. The examiner can normally be reached on M - F, 9:30 AM - 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RDL /Frederick J. Parker/
Primary Examiner, Art Unit 1792